



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/810,603	03/19/2001	Takayuki Kurata	Q62420	8802

7590 07/03/2002

SUGHRUE, MION, ZINN
MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, N.W.,
Washington, DC 20037-3213

EXAMINER

DEJESUS, LYDIA M

ART UNIT	PAPER NUMBER
----------	--------------

2859

DATE MAILED: 07/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/810,603

Applicant(s)

KURATA, TAKAYUKI

Examiner

Lydia M. De Jesús

Art Unit

2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 11-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 is confusing due to the term "and/or" in the limitation "means for driving the tire and/or the road surface in order to cause the tire to rotate" since it appears to set forth that the means for driving the tire and the means for driving the road correspond to the same element in the claimed apparatus and this appears to be inconsistent with the disclosure. Please clarify.

Claims 12-16 have been rejected due to their dependence upon claim 11.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

5. Claim 1, 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kulka et al. [hereinafter Kulka].

Kulka discloses a tire wear forecasting method comprising: forecasting wear on a tire (see Col. 11, lines 22-28) based on based on a temperature of the tread surface part after increasing the temperature of the tread surface part, by causing the tire to come into contact with, and to be run on, a road surface (see Col. 9, lines 14-21).

Kulka discloses that said method comprises measuring the temperature of the tread surface at any selectable time interval. Various temperature measurements are performed and recorded and hence, in a broad sense, it is considered that said tire wear is forecasted based on a temperature differential calculated by subtracting the temperature of the tread surface part before the tire is rotated from the temperature of the tread surface part after rotation begins. The system performing the method disclosed by Kulka includes a revolution sensor, which results are recorded in combination with the temperature measurements, and hence, in a broad sense, it is considered that said measured temperature i.e., history of operational parameter of the tire, is corrected based on a length of a tire contact surface (see Col. 11, lines 1-9).

6. Claims 1, 7, 9, 10, 11, 17, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Williams.

Williams discloses a tire wear forecasting method comprising: forecasting wear i.e. faults, on a tire [22] based on an increase in temperature of the tire by causing the tire to come into contact with, and to be run on, a road surface [24].

The method comprises correcting a measured temperature of the tread surface part based on a length of a tire contact surface, indicated and detected by the use of photodetector [34] and indicator [33].

A non-contact radiant thermometer [25] is used to measure the temperature of the tread surface. Said non-contact thermometer [25] is an infrared radiation sensor and hence considered to be a thermography machine.

Williams discloses a tire wear i.e., fault, forecasting apparatus comprising: a tire support, shown in Figure 1, a road surface [24], means for driving the road surface (see col. , lines 24-26), and means [25] for measuring, without contact, the temperature of the tire. Said apparatus further comprises a display part i.e., monitor oscilloscope.

As discussed above, Williams discloses a tire wear i.e., fault, forecasting method comprising: contacting and running a tire [22] on a surface [24]; measuring an increasing the temperature of the tire i.e., hot spot, a predetermined period of time after said running step is started; and forecasting wear on the tire based on a result of said measuring step. Said forecasting step also comprises forecasting a relative amount of wear and location of the wear on the tire tread surface [23] (see col. 5, lines 5-23).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kulka.

Kulka discloses a method as claimed, as stated above in paragraph 6, it fails to explicitly show that the method comprises measuring temperature the temperature of the tread surface part during an interval when, compared to the temperature of a groove in the tread, the temperature of the tread surface part is higher or measuring the temperature within 90 seconds after the tire is started running.

However, Kulka teaches that temperature measurement is performed at any selectable time interval (see col. 10, lines 66-67). Hence one of ordinary skill in the art at the time the invention was made, would consider an obvious variation of the method disclosed by Kulka to modify said method by performing said measurement particularly during an interval when, compared to the temperature of a groove in the tread, the temperature of the tread surface part is higher or measuring the temperature within 90 seconds after the tire is started running, since, absent any criticality, the selection of a particular time interval for performing said temperature measurement is only considered to be the "optimum" interval for the step of temperature measurement in the method disclosed by Kulka, as stated above, that a person having ordinary skill in the art would have been able to determine using routine experimentation based, among other things, on the desired accuracy, etc. See In re Boesch, 205 USPQ 215 (CCPA 1980).

With respect to claim 4: The limitations in this claim are insufficient to patentably distinguish the claimed method from the method disclosed by Kulka since they are directed to a condition of the tire and fail to set further limitations of the claimed method

i.e., fails to associate a step performed in said method as a cause of or resulting from said condition of the tire.

9. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kulka in view of Shieh et al. [hereinafter Shieh].

Kulka discloses a method as claimed, as stated above in paragraph 6, but fails to show cooling the tire before running it or heating the road surface so that the temperature of the road surface is higher than the temperature of the tread surface part.

Shieh teaches that it is well known in a method of measuring wear characteristics of a tire, to include the step of heating the road surface to simulate an operating temperature of the tire and cooling the tires before starting a test.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add the steps of heating the road surface or cooling the tire before running it to the method of Kulka, as taught by Shieh, in order to increase the accuracy of the forecast by simulating the operating temperature environment of the tire.

10. Claims 11-14 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kajikawa et al. [hereinafter Kajikawa] in view of Bibby.

Kajikawa discloses an apparatus for forecasting wear (col. 6, lines 1-5) comprising: a tire support [3]; a road surface [7]; means for driving the road surface [8]; and means for imaging the surface of the tread part [27] painted with a bright color so as to make a clearer picture of the tire tread.

The apparatus disclosed by Kajikawa also includes memory device i.e. in processing unit [4], a calculating device [23], an inputter and a compensator (see col. 5, lines 4-6), a display part [28] for displaying a pattern of the imaged tread surface.

Kajikawa lacks a means for measuring, without contact, the temperature of the tread surface part, and for discerning a temperature distribution of the tread surface part from the measured temperature.

Bibby teaches using the thermal emissions pattern of a tire with radiometers [2], which are non-contact type thermal imaging means, in order to locate flaw locations in the tread surface.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the combination of the imaging means and the paint of the apparatus of Kajikawa for a thermal imaging means recording the thermal emissions of the tread surface part itself, as suggested by Bibby, and accordingly, to program the processing and imaging devices of the apparatus to process the data from the thermal imaging means, in order to increase the accuracy of wear forecast by voiding the use of an additional layer of material i.e., paint, on the surface to be monitored.

The combination of Kajikawa and Bibby results in an apparatus as that recited in claims 19 and 20, said apparatus comprising a sensor i.e., non-contact radiant thermometer, which senses temperature of a tire after it is run on a surface for a predetermined period of time and without the sensor contacting the tire, and a computer which forecasts wear on the tire based on the temperature sensed by the sensor.

11. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kajikawa in view of Bibby as applied to claims 11-14 above, and further in view of Shieh.

Kajikawa and Bibby together disclose an apparatus as claimed, as stated above in paragraph 10, but fail to disclose means for cooling the tire and means for heating the road surface.

Shieh teaches that it is well known in a method of measuring wear characteristics of a tire, to include the step of heating the road surface to simulate an operating temperature of the tire and cooling the tires before starting a test.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add to the apparatus of the combination of Kajikawa and Bibby a means for cooling the tire and a means for heating the road surface, as suggested by Shieh, in order to increase the accuracy of the apparatus by simulating the temperature of operation of the tire.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kyrtos discloses a temperature sensing brake lining wear indicator. Chung et al. disclose a method for measuring tire wear using intensity of reflected light. Sube et al. disclose a method and apparatus for measuring tire parameters. Jaynes tire pyrometer. Cantu et al. method of foreseeing tread wearing of pneumatic tire. Zoughi et al. disclose a microwave steel belt location sensor for tires. Sass et al. disclose a method of infrared imaging. Prine discloses a microwave flaw detection system. Pernau discloses a tire tread analyzer. Doda et al. discloses a method for estimating irregular wear of tires by recording an amount of wear of painted portions of the tire. Discenzo et al. disclose an apparatus and method for determining wear of an article. Hunter et al.

disclose a tire temperature measurement apparatus. Foreign Patent documents

JP2000075794A, JP20012089618, and JP2000283893A disclose related apparatus.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lydia M. De Jesús whose telephone number is (703) 306-5982.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F.F. Gutierrez can be reached on (703) 308-3875. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.



LDJ
June 27, 2002

Diego F.F. Gutierrez
Supervisory Patent Examiner
Technology Center 2800